SUNOPTICS
PRISMATIC
SKYLIGHTS
THE NATURAL LIGHT FIXTURE

Memo

To: Brian Alcorn

Date: August 27th, 2003

Subject: 2005 Building Energy Efficiency Standards Revisions

The recent collapse of the power grid in the Northeast has caused me to make one last effort, to present to you and through you to the Commissioners, the need to reduce the building area requiring skylights from 25,000 sq. ft. to 10,000 sq. ft.. I would also recommend that the required ceiling height be reduced from 15ft to 12 ft..

The argument for these changes is, they are both cost effective and they would save substantial amounts of electricity, during peak demand hours. I can show you many small daylighted areas that are 10,000 sq. ft. or less that work just great. I don't know the logic of requiring daylighting in 25,000 sq. ft. and not requiring daylighting in smaller spaces when it is very cost effective in 10,000 sq. ft. areas. I will admit that cost effectiveness calculations based on unrealistically high priced lighting controls, will require the larger area. It is not reasonable to justify a forward looking energy conservation standard, using unreasonably high cost photo controls. Using a photo-diode type photo-cell (a much more precise photo-cell than a photo-conductive photo-cell), a two level calibrating board and a two relay switching power cube are the only extra hardware parts required to control two levels of lighting. The total cost is in the $500 dollar range. In **unconditioned spaces** of less than 10,000 sq. ft., don't require any lighting controls, at least give the user of the space the opportunity to have more and better light and to reduce their lighting cost by manually turning off the lights when there is sufficient daylight. Another alternative to photo-controls in small unconditioned spaces would be allow/require utilities to put on a load shedding devise on the lighting circuits so they can reduce their load during their peak demand hours.

The reduction in ceiling height to 12ft., is based on the appropriate use of 4 ft. by 4 ft. skylights. Each skylight will light an area of 300 to 350 sq. ft. with excellent light distribution, making the installation very cost effective.

Another area of concern is the shell building, where there is no electrical or lighting plan at the time of the permit, and therefore no skylights are required. The best time to install skylights, at the least cost, is before the roofing is done. **I recommend that the minimum connected lighting load requirement be removed from the standard.**

I know that it is not the Energy Commission's job to improve the working conditions of the people of California but if you required an **effective** skylight to floor area ratio of 2% in all new buildings, it would make every building in California a delight to work in. There would be fewer divorces, less child abuse, fewer dogs or cats kicked when they are in the way. The fact is daylighted space with an ESFR of 2% or higher reduces stress, and stress of any kind weakens our immune systems and increases societies medical costs. California could become known for having wonderful work environments in all new buildings.

I know that you have taken the recommendations of a number of consultants and that you have pressure put on you from a wide variety of stakeholders but **the Commission's mandate from the people of California is to adopt energy conservation measures that are cost effective**.

To demonstrate the cost effectiveness of daylighting space with skylights, I would like to compare the State's photovoltaic subsidy to skylights. The State would get six to ten times more energy savings, if that same subsidy was used to subsidize 100% of the cost of daylighting installations, instead of subsidizing photo-voltaic installations at $4.00 per watt. The user then has to invest another $4.00 to $5.00 a watt to complete the system. One 4 ft. by 8 ft. or 5 ft. by 6 ft skylight will deliver more light than 1kW of electric lighting during peak demand hours. **Light from the sun powers both systems**. **Over the life of a skylight, it replaces electric lighting energy for less than $.015 per kW**. It does feel good to support the generation of electricity without the use of any fossil or biomas fuels **but we are talking big money here** and by example suggesting to society that this is where we should be heading. Truth is, if we were to rely solely on PV generated electricity, we would cut our standard of living by 50% or more.

There is no energy shortage on the planet, nor will there ever be a shortage. We may run out of some types of energy sources over time, but there will be energy available. The problem is to get those energy sources into a useful form. Most conversion methods pollute our air and water; as well as create greenhouse gases when produced and consumed. Ignoring the consequences of the pollution and the "Not In My Back Yard" considerations by society, different types of energy, cost more to produce**. As the low cost sources become less available, the cost of useful energy will rise.**

The real shortage in the world is money and that must be honored. An adequate supply of least cost, least polluting energy should be the Commission's primary goal. Daylighting with skylights is one example of how this goal can be achieved.

I have been involved in energy conservation standards and regulations since the oil embargo in the early 70's. I decided early on, that daylighting was the easiest, most cost effective way to save energy and improve the environments in which to work, learn, shop, live and play at the same time.

From the start of our business here at Sunoptics, we set a fantasy goal of daylighting enough space to offset the electricity produced by a 1,000 megawatt generating plant. Over the last 25 years the acceptance of daylighting, as a cost effective energy conservation measure, has grown

to the point where we now ship enough skylights to offset 150 to 200 kW of electricity per day, nearly a megawatt a week. Most of these skylights are shipped out of state. Today, our goal doesn't seem like a fantasy. With your help, our goal not only seems possible, but also may be too low. The skylights we have shipped to date replaces electric lighting electricity of 350 to 400 megawatts during peak demand hours. With the accelerated acceptance of daylighting, I believe that our goal can be reached in as little as 8 more years.

It should be embarrassing to the California Energy Commission, the Commissioners and their Staff for not recognizing sooner the great opportunity daylighting offers, to save energy, in such a cost-effective manner.

The state of California, the United States of America and the Whole World are in such a financial mess that everyone needs to deal with truth, when it can be found. My truth is, you need to reduce the required area to 10,000 sq. ft., lower the ceiling height requirement to 12 ft. and eliminate the connected lighting load requirement. **This is no time to be timid.**

I want to hear your truth and if I'm wrong I want to correct my truth, and if I'm right, change the standard.

Thank you for your time to consider my position on this matter. I am including a CD of photographs of daylighted buildings that you should find interesting. They may help you have the courage to make these proposed changes. At 77 1/2 years, this may be the last time I will be able to speak publicly for daylighting buildings with skylights, as an important strategy for an ENERGY INDEPENDENT AMERICA and a SUSTAINABLE ENERGY FUTURE.

Respectfully

Jerry Blomberg

CC Commissioner Arther H.Rosenfeld
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